

SiC-SiC and C-SiC Honeycomb for Advanced Flight Structures, Phase II

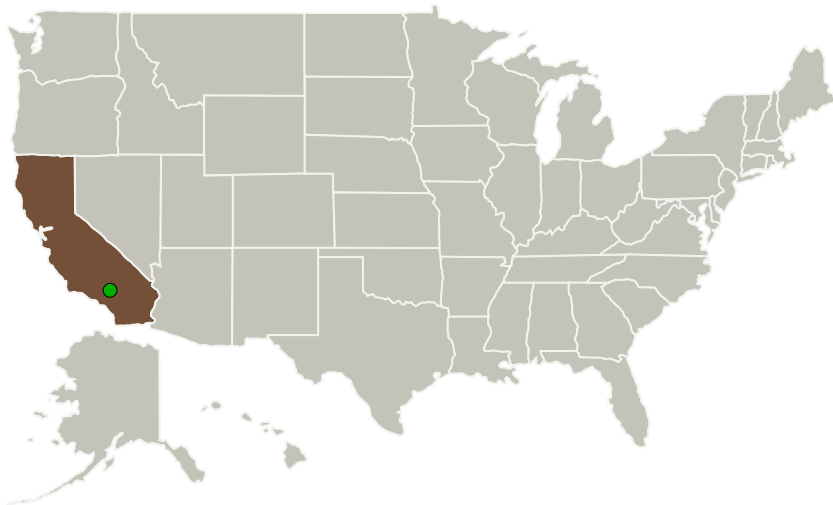


Completed Technology Project (2011 - 2013)

Project Introduction

The proposed project builds upon the work done in Phase I with the development of a C-SiC CMC honeycomb material that was successfully tested for mechanical properties at both ambient and high temperature. The further study expands to include the development of an SiC-SiC honeycomb using the proven infiltration process of the Phase I project. In the proposed project, an SiC prepreg will be engineered that can be formed into a honeycomb and then infiltrated with SiC to form a ceramic SiC-SiC honeycomb. The honeycomb will then be tested mechanically at ambient temperature and high temperature. This testing will include cycling the material to determine property falloff. C-SiC and SiC SiC will be compared in this study. The thermal characteristics, such as conductivity and emissivity, will also be tested. The integration of such a material into hypersonic and other structures is a key area of the research; therefore a bonding study is included in the current proposal. Several bonding technologies and processes will be investigated and tested mechanically as well as cycled to determine durability. The goal of the study is to provide a sandwich level technology that can be integrated into hypersonic vehicle structures and acreage.

Primary U.S. Work Locations and Key Partners



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for Advanced Flight Structures,
Phase II

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Organizations Performing Work	Role	Type	Location
Ultracor	Lead Organization	Industry	Livermore, California
● Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California

Primary U.S. Work Locations

California

Project Transitions

**June 2011:** Project Start**November 2013:** Closed out**Closeout Summary:** SiC-SiC and C-SiC Honeycomb for Advanced Flight Structures, Phase II Project Image**Closeout Documentation:**

- Final Summary Chart Image(<https://techport.nasa.gov/file/139448>)

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Ultracor

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

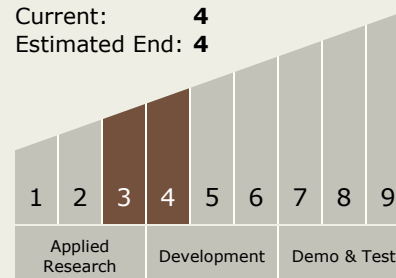
Stanley N Wright

Technology Maturity (TRL)

Start: 3

Current: 4

Estimated End: 4





Technology Areas

Primary:

- TX14 Thermal Management Systems
 - └ TX14.2 Thermal Control Components and Systems
 - └ TX14.2.4 Insulation and Interfaces

Target Destinations

Earth, The Moon, Others Inside the Solar System, Outside the Solar System, The Sun, Mars